

THE BRACHIOPOD *ACANTHOCRANIA* IN THE ORDOVICIAN OF WALES

by A. D. WRIGHT

ABSTRACT. *Acanthocrania*, a rare craniacean brachiopod in the Ordovician of Europe, is described for the first time from Wales, where it occurs in the form of *A. papillifera* (Roemer).

THE inarticulate brachiopod *Acanthocrania* is distinguished from other attached craniaceans by having its brachial valve 'ornamented by fine papillae or spines' (J. S. Williams 1943, p. 71). The type species, *Crania spiculata* Rowley 1908, is a Carboniferous form from North America, where the genus is also recorded by Cooper (1956, p. 283) as being widely distributed and fairly abundant in the Ordovician.

In contrast, *Acanthocrania* is rather uncommon in the European Ordovician. The first specimens attributed to the genus in the British Isles were from the Ashgillian Portrane Limestone of Eastern Ireland (Wright 1963, p. 250), from which a small number of silicified brachial valves were classified as *Acanthocrania cracentis* sp. nov., and *Acanthocrania* sp. Although the valves of the latter are incomplete, their much coarser ornament in particular enables them to be readily separated from *A. cracentis*.

A subsequent record from the British Isles is that of Temple (1968, p. 18) from Keisley, Westmorland, in beds which must be very close to the Ordovician–Silurian junction; although Temple favours an early Llandoveryan age for these beds, a late Ashgillian age cannot be discounted. A specific name was not proposed for the contained *Acanthocrania*, and indeed the presence of ribs in addition to spines on the exterior of these shells casts some doubt on the inclusion of the species in *Acanthocrania*. For, as Temple says (p. 19), the presence of both ribs and spines makes it possible to refer the form to either *Acanthocrania* or *Philhedra* Koken 1889, and it is the unusually fine nature of the ribs which cause him to include the form in *Acanthocrania*. The present writer has always taken the presence of any radial ribs as being a characteristic of *Philhedra* and not *Acanthocrania*; this would seem also to be the interpretation of Cooper (1956). However, there is some ambiguity in Williams's original definition, for although he states categorically that 'radial costae do not occur', he also says that 'fine radial striae may be present' (op. cit., p. 71). Nevertheless in earlier discussion (p. 70) he comments that the ornamentation of his 'third type' (*Acanthocrania*) 'consists of fine papillae or spines and concentric growth lines', without any mention of either radial striae or ribs. Thus, although there is some uncertainty, I would interpret Williams's intention to be that forms included in *Acanthocrania* should not have obvious radial ornament; and accordingly I would regard the Keisley specimens as being better assigned to *Philhedra* than *Acanthocrania*.

Elsewhere in the European Ordovician several of the forms treated by von Heune (1899) have recently been transferred to *Acanthocrania* (Wright 1963, p. 249). These comprise three species: *Philhedra pustulosa* (Kutorga 1846), *Philhedra hemipustulosa* Heune 1899 and *Craniella* (?) *papillifera* (Roemer 1861). This last is a particularly

distinctive species of *Acanthocrania*, and may be readily distinguished from all other described Ordovician forms by the development of spines of two distinct sizes (Heune 1899, p. 318); a similar ornamentation is, however, apparent on the illustrations of a form recently described from the Carboniferous of Montana as *A. spinosa* by Rodriguez and Gutschick (1967, pl. 41, figs. 10–13). Heune's uncertain generic placing of Roemer's species is a reflection of the total lack of evidence at the time concerning the nature of the shell interior, for the species is rare with only two exteriors and an impression being available to Heune including the original single specimen of Roemer. The latter came from an erratic block in Silesia, and was considered by Heune to be of the same age as his own specimens from the Lyckholm Beds (F₁₆) of Estonia (Vormsi Stage), i.e. Ashgillian.

In sorting through material collected from the Ashgill Series of the Llanfyllin District, Montgomeryshire, by a past student of this department, Miss S. E. Devonald, a specimen of a craniacean was found which on close examination turns out to belong to *Acanthocrania*. The specimen comes from the old quarry behind Belan Farm, situated about 2 miles NW. of Llanfyllin (SJ 116209), which is listed by the Geological Survey in the Oswestry Memoir as locality 22 (Wedd *et al.* 1929, p. 62).

As may be seen from the figures on Plate 86, the specimen possesses spines of two distinct series as in *A. papillifera* (Roemer), and comparison with the description and illustrations of that species given by Heune (1899, 317–318, pl. 5, figs. 10, 11) leaves little doubt that the two are conspecific; minor variations in form between the specimens are not regarded as having taxonomic significance in these attached craniaceans. The disposition of the adductor scars and other features of the brachial valve interior is consistent with that of other species of *Acanthocrania*, and confirms the earlier placing of *Crania papillifera* Roemer in this genus (Wright 1963, p. 249). The pedicle valve is not known for either this or any other species of *Acanthocrania*, and it would seem that this valve was essentially composed of organic material. Recent examination of the sectioned margin of an attached shell has, however, revealed the presence of a lens of calcite in the position where the marginal rim of the pedicle valve would be expected to occur (Williams and Wright 1970, p. 39).

SYSTEMATIC DESCRIPTION

Family CRANIIDAE Menke 1828

Genus ACANTHOCRANIA Williams 1943

Acanthocrania papillifera (Roemer 1861)

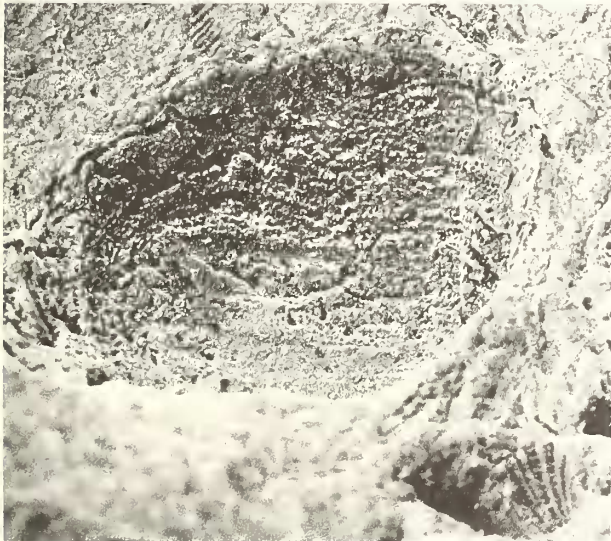
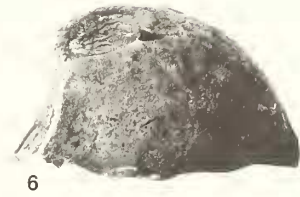
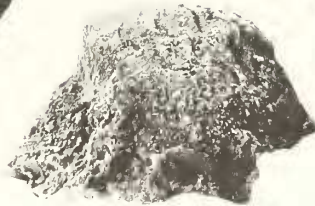
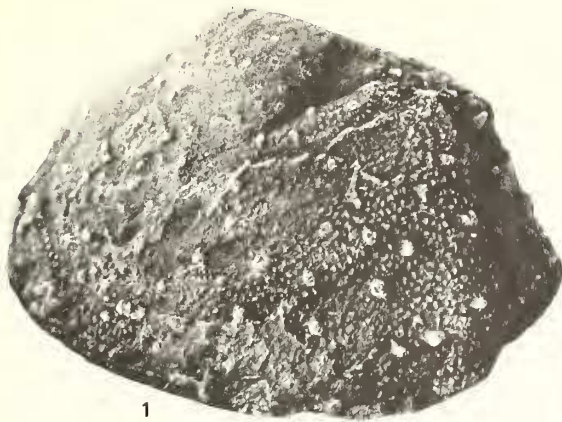
Plate 86, figs. 1–9

1861 *Crania papillifera* Roemer, pp. 48–49, pl. 5, fig. 14.

1899 *Craniella? papillifera* (Roemer); Heune, pp. 317–318, pl. 5, figs. 10, 11.

EXPLANATION OF PLATE 86

Figs. 1–9. *Acanthocrania papillifera* (Roemer); Ashgill Series, Belan Quarry, Llanfyllin, Montgomeryshire. 1–4. Latex cast of brachial valve external mould. BB 34089 b. 1, view of antero-lateral surface to show detail of ornamentation, $\times 5$; 2–4, lateral, dorsal, and postero-dorsal views of cast, $\times 3$. 5–8. Dorsal, lateral, postero-dorsal, antero-dorsal views of brachial valve internal mould. BB 34089 a. $\times 3$. 9. View of anterior surface of brachial valve external mould showing detail of ornamentation. BB 34089 b. $\times 5$.



WRIGHT, *Acanthocrania*